Remarks/Arguments

Claims 1-18 are pending, and are rejected.

Claims 1-18 are cancelled. Claims 19-38 are added.

Responsive to the rejections, applicant has cancelled claims 1-18 without prejudice and disclaimer, and added claims 19-38 to more particularly point out and distinctly claim the subject matter that applicant regards as the invention. Applicant submits that claims 19-38 are patentable over U.S. Patent 4,897,883 ("Harrington"), U.S. Patent 5,227,780 ("Tigwell"), JP Patent Publication P2001-8278A ("Eisaku"), and U.S. Patent 6,130,910 ("Anderson"), as discussed below.

The present invention relates to a control device for extending the operational range of an IR remote control. See page 1, lines 30-32. An example of the control device is shown in FIG. 1A, where the control device includes a RF transmitter 24 having an IR receiver for receiving an IR remote control signal from an IR remote control 20, and an RF receiver 38 for receiving a RF signal from the RF transmitter 24 and generating an IR signal which is representative of the IR remote control signal received by the RF transmitter 24. See page 2, lines 3-19. A feature of the control device is that the RF transmitter 24 extracts an IR carrier frequency from the received control signal, transmits a RF signal having a data segment for the control information and the extracted IR carrier frequency, and the RF receiver 38 converts the RF signal into an IR control signal having an IR carrier with the extracted IR carrier frequency. See, for example, page 5, lines 11-16 and 25-30. An advantage of this feature is that the control device can be used to extend IR remote control signals from different manufacturers with different IR carrier frequencies. For examples of a data segment,

see the messages shown in FIGs. 2-5. Note that messages shown in FIGs. 4 and 5 also include four bits for the IR carrier frequency.

Applicant submits that the four references, considered singly and in combination, do not disclose or suggest a control device including a transmitter for receiving an IR remote control signal having a IR carrier frequency, extracting the IR carrier frequency from the received IR remote control signal, and generating a second signal having data segment for the extracted IR carrier frequency and control information in the received IR remote control signal, and a receiver for receiving the second control signal and generating another IR remote control signal having the extracted IR carrier frequency and a data segment having the control information.

Applicant has incorporated the above feature into independent claims 19, 33, 35, and 37. Independent claim 19, for example, recites a control device for extending an effective control range of a first control device for controlling an IR controllable device. The control device includes a receiver for receiving from the first control device a first control signal having a first data segment for control information; means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency. This RF signal is adapted to be received by a second control device that converts the RF signal into an IR control signal for controlling the IR controllable device, and the IR control signal has an IR carrier with the IR carrier frequency and a data segment for the control information. This claim is directed to element 24 in FIG. 1A.

Applicant submits that the four references, considered singly or in combination, do not disclose or suggest a control device having "means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a

second data segment for the control information and the IR carrier frequency," as recited in claim 19.

Harrington discloses an IR signal extender for extending the operational range of an IR data link. The extender includes means 14 for transmitting a signal, and means 4 for receiving the signal and producing an IR signal 12 corresponding to the received signal for controlling a device 1. See FIG. 1, and col. 2, lines 43-46. The means 14 includes an IR transmitter 3 and a repeater unit 5. See FIG. 1. The repeater unit 5 (relied upon as the extracting means) converts IR signal transmitted by the IR transmitter 3 into FM radio signal form. See col. 3, lines 25-28. The means 4, having an emitter 6, recreates the IR signal from the FM radio signal. See FIG. 1, and col. 3, lines 28-38. As shown in FIG. 3, the repeater 5 converts the incoming IR radiation signal into an electrical signal, which, after being amplified, becomes the modulating input of a FM transmitter 13. The radio frequency energy of the FM transmitter 13 is then radiated by an antenna 14 of the repeater 5. See FIG. 3, and col. 3, lines 54-57. The means 4 receives the RF signal and converts the FM signal back to an IR signal for controlling the IR controllable device. See FIG. 4. Nowhere does Harrington disclose or suggest that the repeater 5 (relied upon as the extracting means) extracts "an IR carrier frequency from the first control signal" and that the FM signal (relied upon as the RF signal) has a data segment for "the IR carrier frequency," as recited in claim 19.

Tigwell discloses a transponder 12 with a portable UHF radio transmitter remote 10 for controlling one or more of IR controllable appliances. See FIGs. 1 and 2. The transponder 12 stores the information necessary to mimic or replicate IR codes. See col. 3, lines 3-6. The UHF remote 10 transmits a data frame containing a 7-bit data word, which is used by the transponder 12 to retrieve the corresponding stored

information for producing an IR signal for controlling one of the IR controllable devices. See col. 3, lines 6-17. Thus, the correlation between the stored IR code information and the UHF signal is pre-established, for example, through learning, before the use. See col. 3, lines 33-40. The transponder 12 learns this correlation by receiving both an IR control signal from an IR remote designed for controlling an IR controllable device and a RF control signal generated by a user pressing a key on the UHF remote 10. See col. 3, lines 41-56. Thus, one RF control signal is mapped to an IR control signal and a RF control signal needs no data segment designating an IR carrier frequency. Further, the control information of an IR control signal should differ from that of a corresponding RF control signal. This is because the control information, i.e., the 7-bit data frame, of a RF control signal is used to find a mapped IR control signal but the control information of the IR signal, on the other hand, is used to control an IR controllable device.

From the discussion above, it is clear that Tigwell does not disclose or suggest that the transponder 12 includes "means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency," as recited in claim 19.

Eisaku discloses a remote control signal transmission system, provided with a multi-remote control function having high efficiency and controlling devices placed at a plurality of points. See Abstract. In the following discussion of the system, please refer to FIG. 1 and the Abstract. The system includes a remote commander 4 at point 2 transmitting an IR remote control signal 9 using a carrier frequency B. A transmitter (or "transfer unit" as used in the English translation attached to the Office Action) 5 at point 2 calculates a carrier frequency A of a device 3 in point 1, and transmits a remote

control code signal 10 including the calculated carrier frequency A. The control code signal 10 is used by components in point 1 to produce IR signal with a different carrier frequency. The transmitter 5 only has to recognize one kind of carrier frequency B, thus reducing the cost and size of the transmitter 5. Therefore, unlike the present invention, the transmitter 5 cannot be used with a different remote commander having a different IR carrier frequency.

Furthermore, since the carrier frequency B in the IR remote control signal 9 is fixed and already known by the transmitter 5, the transmitter 5 does not have to extract the carrier frequency from the IR control signal 9. In addition, since the carrier frequency A used in the IR control code signal 10 is not the carrier frequency B in the IR remote control signal 9, the remote control code signal 10 does not need a data segment for the IR carrier frequency B. As such, Eisaku does not disclose or suggest a remote control includes "means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency," as recited in claim 19.

Anderson discloses an apparatus for high efficiency wideband power amplification. It is not concerned with the problem of extending an effective range of a remote control for controlling an IR controllable device. As such, Anderson does not disclose or suggest a control device having "means for extracting an IR carrier frequency from the first control signal and for means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency," as recited in claim 19.

In light of the fact that the four references, considered singly and in combination, do not disclose or suggest a control device having "means for extracting an IR carrier

frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency," as recited in amended claim 19, applicant submits that claim 19, and its dependent claims 20-32, are patentable over these four references.

Independent claim 33 recites a control device for extending an effective control range of a first control device for controlling an IR controllable device. The control device includes a RF receiver for receiving from a first control device a RF control signal having a data segment for control information and an IR carrier frequency, wherein the IR carrier frequency is extracted by the first control device from a received IR control signal having the IR carrier frequency; and an IR transmitter for transmitting a first IR control signal for controlling the IR controllable device. This claim is directed to element 38 in FIG. 1A.

From the discussion above, it is clear that the four references, considered singly and in combination, do not disclose or suggest a control device having "a RF receiver for receiving from the first control device a RF control signal having a data segment for control information and an IR carrier frequency, wherein the IR carrier frequency is extracted by the first control device from a received IR control signal having the IR carrier frequency," as recited in claim 33. (Emphasis added.) Thus, applicant submits that claim 33, and its dependent claim 34, are patentable over the four references.

Independent claim 35 recites a control device for extending an effective control range of a first control device for controlling an IR controllable device. The control device includes a receiver for receiving from the first control device a first control signal having an IR carrier frequency and a data segment for control information, wherein the receiver extracts the IR carrier frequency from the first control signal; and an IR

transmitter for transmitting an IR control signal for controlling the IR controllable device. The IR control signal has a carrier with the IR carrier frequency and has a data segment for the control information. This claim is directed to the combination of elements 24 and 38 in FIG. 1A.

From the discussion above with respect to claim 19, it is clear that the four references, considered singly and in combination, do not disclose or suggest a control device having "a receiver for receiving from the first control device a first control signal having an IR carrier frequency and a data segment for control information, wherein the receiver extracts the IR carrier frequency from the first control signal," as recited in claim 35. (Emphasis added.) Thus, applicant submits that claim 35, and its dependent claim 36, are patentable over the four references.

Independent claim 37 recites a control device for controlling an IR controllable device. The control device includes a transmitter for transmitting a first control signal having an IR carrier frequency and a data segment for the control information. The first control signal is adapted to be received by a second control device that extracts the IR carrier frequency and produces an IR control signal having a data segment for the control information, and having a carrier with the extracted IR carrier frequency. This claim is directed to element 20 in FIG. 1A.

Again, from the discussion above with respect to claim 19, it is clear that the four references, considered singly and in combination, do not disclose or suggest a control device having "a transmitter for transmitting a first control signal having an IR carrier frequency and a data segment for control information, wherein the first control signal is adapted to be received by a second control device that extracts the IR carrier frequency and produces an IR control signal having a data segment for the control information,

and having a carrier with the extracted IR carrier frequency," as recited in claim 37. (Emphasis added.) Thus, applicant submits that claim 37, and its dependent claim 38, are patentable over the four references.

Having fully addressed the Examiner's objections and rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6813, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 07-0832.

Respectfully submitted,

By Reitseng Lin
Reg. No. 42,804
Phone (609) 734-6813

Patent Operations
Thomson Licensing Inc.
P.O. Box 5312
Princeton, New Jersey 08540
February 11, 2004

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to [Mail Stop Non-Fee Amendment], Commissioner for Patents, Alexandria, Virginia 22313-1450 on:

2-11-04
Date

Karen Schlauch
Karen Schlauch